

REMARKS

I. STATUS OF CLAIMS

Claims 55-60 and 62-107 are pending. Applicants amended Claim 55 to incorporate the limitation of Claim 61, and Claim 107 to incorporate the limitation of Claim 108. Accordingly, Claims 61 and 108 were canceled. Claim 102 was amended to add the limitation found in claim 103. Support for these amendments may be found, for example, in original Claim 4 and page 6 of the specification. Applicants submit that no new matter has been added by these amendments.

II. REJECTION UNDER 35 U.S.C. § 103

The Examiner has rejected Claims 55-108 under 35 U.S.C. § 103(a) as unpatentable over Varughese et al., *Chemical Attraction Between Expoxidized Natural Rubber and Silica: Studies on Cure Characteristics and Low Temperature Dynamic Mechanical Properties* ("Varughese"), or over Japanese Patent Abstract 07-090123 ("JP 07-090123") for the reasons disclosed in pages 2-3 of the Office action. Applicants respectfully traverse this rejection for at least the reasons presented below.

To establish a *prima facie* case of obviousness under 35 U.S.C. § 103, the Examiner bears the burden of establishing each of three requirements. First, the references must teach or suggest each and every element and limitation recited in the claims. See M.P.E.P. § 2143.03. Second, the Examiner must establish that some suggestion or motivation exists, either in the references themselves, or in the knowledge generally available to one of ordinary skill in the art, to modify the references to achieve the presently claimed invention. See M.P.E.P. § 2143.01. Third, the Examiner must establish a reasonable expectation of success for the proposed combination. See M.P.E.P. § 2143.02. Each of these requirements must "be found in

the prior art, and not be based on applicant's disclosure." M.P.E.P. § 2143. Moreover, deficiencies in the references cannot be cured by appealing to "common sense" and "basic knowledge" without any evidentiary support. *In re Zurko*, 258 F.3d 1379 (Fed. Cir. 2001).

At a minimum, the Examiner cannot establish (1) that the cited references teach or suggest each and every element recited in the claims and (2) that some suggestion or motivation, either in the references themselves, or in the knowledge generally available to one of ordinary skill in the art, to modify the references to achieve the presently claimed invention. See M.P.E.P. §§ 2143.01 & 2143.03.

A. INDEPENDENT CLAIMS 55, 62, AND 107

Applicants submit that Varughese fails to teach or suggest, at a minimum, the claim limitation wherein the "crosslinkable elastomeric material has an effective degree of crosslinking equal to at least 65% after no more than 5 minutes of heating at 170°C," which is found in independent Claims 55, 62, and 107. Varughese discloses only formulations using 50 mol % epoxidized natural rubber and silica. (Varughese, at 1847). Varughese goes on to disclose that generally, the interaction between filler and polymer are not high enough to be detected through a rheometer torque rise. (Varughese, at 1848-49). This is consistent with Varughese's disclosure that chemical interaction under conventionally cured silica-filled vulcanizates is comparatively poor. (Varughese, at 1849). Thus, Varughese does not teach "crosslinking equal to at least 65%" and provides no direction to a person of ordinary skill in the art to achieve it.

Similarly, JP 07-090123 fails to teach or suggest, at a minimum, the claim limitation of "crosslinkable elastomeric material has an effective degree of crosslinking equal to at least 65% after no more than 5 minutes of heating at 170°C" found in Claims

55, 62, and 107. In fact, JP 07-090123 does not address the degree of cross-linking. Applicants invite the Examiner to review the translation of this reference, provided with the concurrently filed Information Disclosure Statement. As shown by Varughese and Comparative Examples 13 and 14 of Applicants' Table 4, the mere combination of the claimed elements does not inherently yield a composition with the required degree of cross-linking. Therefore, JP 07-090123 does not teach "crosslinking equal to at least 65%" and is incapable of providing direction to a person of ordinary skill in the art to achieve it.

Moreover, the compositions disclosed in JP 07-090123 are cured with conventional sulfur-based vulcanizing systems. (JP 07-090123, ll. 21-29, p. 10; and Table 1, pp. 7-8). JP 07-090123 discloses that the sulfur content is preferably no less than 1.2 parts by weight, and more preferably from 1.5 to 3.0 parts by weight, per 100 parts by weight of rubber component. (JP 07-090123, ll. 28-29, p. 10). As indicated in Table 1, page 7, the base composition of JP 07-090123 includes 0.7 phr curing promoter and 1.7 phr sulfur. (JP 07-090123, Table 1, pp. 7-8).

In view of the deficiencies of Varughese and JP 07-090123, the Examiner has not met this requirement for a case of prima facie obviousness. See M.P.E.P. §2143.03. Accordingly, the Examiner must establish some motivation to modify the teachings of these references, since "[t]he fact that the claimed invention is within the capabilities of one of ordinary skill in the art is not sufficient by itself to establish a prima facie case of obviousness." M.P.E.P. § 2143. In other words, the mere fact that Varughese, or JP 07-090123 could be modified to meet the degree of crosslinking limitation does not make the modification obvious, unless the Examiner-cited references

suggest the desirability of such polymeric material configurations. See *In re Laskowski*, 10 U.S.P.Q.2d 1397, 1398 (Fed. Cir. 1989). In the present case neither of the Examiner-cited references suggests the desirability of “crosslinkable elastomeric material has an effective degree of crosslinking equal to at least 65% after no more than 5 minutes of heating at 170°C”. Rather, as previously noted, Varughese discloses that chemical interaction under conventionally cured silica-filled vulcanizates is comparatively poor. And JP 07-090123 does not appreciate the property and therefore cannot provide any motivation to modify.

Moreover, there is no motivation to combine the two references. A prior art reference must be considered as a whole, including any part that leads a person of ordinary skill away from the claimed invention. *W.L. Gore & Associates, Inc. v. Garlock, Inc.*, 721 F.2d 1540 (Fed. Cir. 1983), cert. denied, 469 U.S. 851 (1984). Thus combining Varughese with JP 07-090123 would result in a method for vulcanizing the composition of Varughese with a sulfur-based agent in order to meet the degree of crosslinking limitation of Applicants’ claims. In Applicants’ claims 55, 62, and 107, however, “the crosslinking step is carried out essentially without additional crosslinking agents.”

Accordingly, for these reasons, claims 55, 62, and 107 and all claims that depend therefrom are patentable over the cited prior art.

B. INDEPENDENT CLAIMS 93, 102, AND 103

Applicants submit that neither Varughese nor JP 07-09123 teach or suggest, at a minimum, the claim limitation of obtaining “a degree of dispersion of the active filler greater than 90%, . . . at a predetermined temperature, to avoid pre-crosslinking of the elastomeric composition,” as found in independent Claim 93, and the claim limitation

"wherein the active filler is dispersed in the elastomeric polymer containing epoxide groups with a dispersion index greater than 90%," as found in independent Claims 103 and 107.

Again, neither reference recognizes this dispersion property and/or the need to avoid pre-crosslinking of the elastomeric composition. Moreover, neither is inherent to a disclosure of the combination of elastomer and filler. See for example, Comparative Example 9 from Applicants' Table 3, which does not meet the dispersion requirement. Since the references do not recognize these limitation, they cannot provide the necessary motivation to modify their teachings. See M.P.E.P. § 2143.01 Only Applicants' specification provides that information, but that is not available to the Examiner to use to meet his burden with respect to an obviousness rejection. See M.P.E.P. § 2145.X.A

Accordingly, Applicants submit that the Examiner has failed to satisfy the burden of establishing a *prima facie* case of obviousness with respect to independent Claims 55, 62, 93, 102, 103, and 107 of the presently claimed invention, and respectfully request that all § 103 rejections be withdrawn. Since it is imperative that claims 55-60, 63-92, 94-101, and 104-106 be read in light of independent Claims 55, 62, 93, 102, 103, and 107 that they respectively depend from, Applicants respectfully submit that neither Varughese, nor JP 07-090123 teach or suggest all the present claim limitations found in the presently rejected claims. Thus, Applicants respectfully submit that these rejections are improper and respectfully request that they be withdrawn.

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III. CONCLUSION

In view of the foregoing amendments and remarks, Applicants respectfully request reconsideration and reexamination of this application and the timely allowance of the pending claims.

Please grant any extensions of time required to enter this response and charge any additional required fees to our deposit account no. 06-0916.

Respectfully submitted,

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